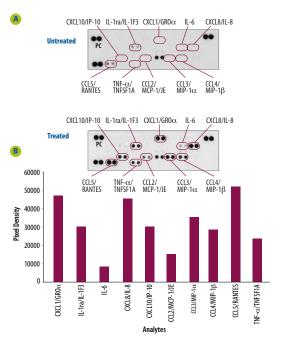
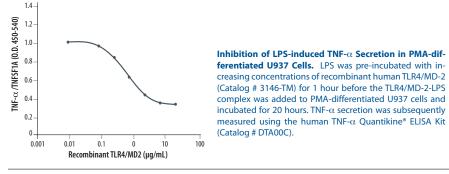


Assessing the Cytokine Response to the TLR Agonist LPS



Human Cytokine Array Analytes			
• C5a	• IL-13		
• CD40 Ligand	• IL-16/LCF		
• G-CSF	• IL-17		
• GM-CSF	• IL-17E		
• CXCL1/GRO α	• IL-23		
• CCL1/I-309	• IL-27		
• ICAM-1/CD54	• IL-32a		
• IFN-γ	• CXCL10/IP-10		
• IL-1α/IL-1F1	• I-TAC		
• IL-1β/IL-1F2	• CCL2/MCP-1/JE		
• IL-1ra/IL-1F3	• MIF		
• IL-2	• CCL3/MIP-1α		
• IL-4	• CCL4/MIP-1β		
• IL-5	Serpin E1		
• IL-6	CCL5/RANTES		
• CXCL8/IL-8	• CXCL12/SDF-1		
• IL-10	•TNF-α/TNFSF1A		
• IL-12 p70	• TREM-1		

Detection of Multiple Analytes by Cytokine Array Analysis. A. THP-1 cells were untreated or treated with LPS (1 µg/mL) for 16 hours. The conditioned media was assessed for the relative levels of 36 different cytokines using the Proteome Profiler™ Human Cytokine Array Kit (Catalog #ARY005). PC = Positive Control B. Histogram profiles for select analytes following LPS treatment were generated by quantifying the mean spot pixel densities from the cytokine array using image analysis software.





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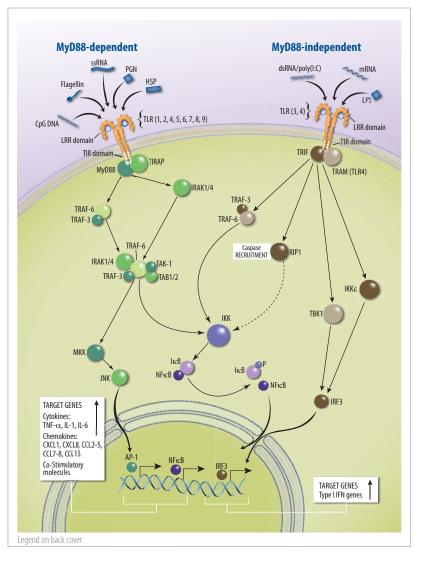
FRONT COVER ILLUSTRATION

Toll-like receptor signaling pathways. Toll-like receptors (TLRs) are Type I transmembrane proteins located either on the cell surface or in intracellular compartments such as endosomes or lysosomes. These receptors contain multiple copies of a leucine-rich repeat (LRR) motif in the extracellular domain and a Toll/IL-1 receptor (TIR) domain in the cytoplasmic portion. TLRs can homo-, and heterodimerize. TLRs respond to a variety of different ligands both exogenous and endogenous, including peptidoglycan (PGN), heat shock proteins (HSP), flagellin, CpG DNA, ssRNA, lipopolysaccharide (LPS), mRNA, dsRNA/poly (I:C), and other microbial proteins and lipids not shown. Ligand binding to TLRs stimulates their interaction with the adaptor proteins, MyD88, TIR domain-containing adaptor inducing IFN- β (TRIF), TRIF-related adaptor molecule (TRAM), or TIR domain-containing adaptor protein (TIRAP). In the MyD88-dependent signaling pathway (left), MyD88 recruits members of the IL-1R-associated kinase family (IRAK1/4) and the TNF receptor-associated factors (TRAF-3/6) by the TIRAP adaptor protein. IRAK1/4 and TRAF-3/6 associate with TGF-β-activated kinase (TAK-1) and its binding partners, TAB1 and TAB2 leading to activation of the IkB kinase kinases (IKK) and MAPK kinases (MKK). MKKs activate c-Jun N-terminal kinases (JNK), which then translocate to the nucleus and induce AP-1 activity. Activated IKKs phosphorylate IkB disrupting its interaction with NFkB and allowing NFkB to translocate to the nucleus. AP-1 and NFκB activate the transcription of pro-inflammatory cytokines, chemokines, and co-stimulatory molecules. The MyD88-independent TLR signaling pathway (right) involves the recruitment of TRIF or TRAM which recruit TRAF-3/6 or receptor interacting protein kinase 1 (RIP1) to induce the activation of NFκB. TRIF can also activate TANK-binding kinase 1 (TBK1) and the IKKE kinase. Activated TBK1 and IKKE can both phosphorylate interferon regulatory factor 3 (IRF3) leading to the induction of Type I IFN genes.

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R&D Systems Tools for Cell Biology Research[™]

Toll-like Receptors: Recognition of Microbial Pathogens & Induction of the Immune Response





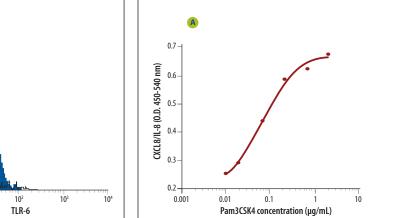


Toll-like Receptor Signaling Pathways

Toll-like receptors (TLRs) are a class of pattern recognition receptors (PRRs) in mammals that are related to the IL-1 receptor (IL-1R) superfamily. TLRs are involved in initiating the innate and adaptive immune responses following infection by microbial pathogens. They are activated upon recognition of conserved pathogen-associated molecular patterns (PAMPs) that are present in microbial proteins, nucleic acids, lipids, and carbohydrates. These PAMP-containing molecules act as ligands to trigger TLR-dependent signal transduction cascades that ultimately activate the transcription factors, AP-1, NFκB, and IRF3. AP-1 and NFkB induce the expression of pro-inflammatory cytokines (IL-1, IL-6, TNF- α), chemokines (CXCL8/IL-8, CXCL1/GROα, CCL2/ MCP-1/JE, CCL3/MIP-1 α , CCL4/MIP-1 β ,

CCL5/RANTES, CCL7/MCP-3, CCL8/MCP-2, CCL13/MCP-4), and co-stimulatory molecules. IRF3 stimulates the expression of Type I IFN-inducible genes. TLR-dependent expression of pro-inflammatory molecules at an infection site results in the recruitment of leukocytes that increase the killing of pathogenic microbes and infected cells. TLRs have a leucine-rich extracellular domain, a single transmembrane domain, and a cytoplasmic domain containing a Toll/IL-1R (TIR) motif. This domain mediates intracellular interactions between TLRs and other TIR-domain containing molecules, including adaptor proteins such as MyD88, TIRAP, TRIF, and TRAM. Humans express ten different TLRs, each recognizing a distinct set of exogenous and endogenous ligands.

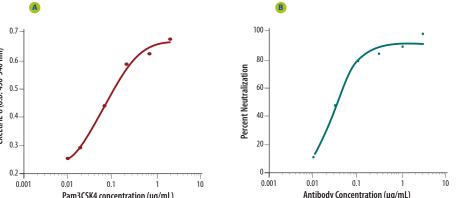
Some TLRs are located on the cell surface (TLR1, 2, 4, 5, 6, 10) and specialize in the recognition of bacterial products, while others are located in intracellular compartments (TLR3, 7, 8, 9) and recognize viral nucleic acids. Different types of immune system cells each express a distinct subset of TLRs allowing vigilant surveillance for bacterial, viral, and fungal infections. Polymorphisms in the TLRs or in TLR-signaling molecules have been linked to immunodeficiencies in response to bacterial and viral infections, and to human disease conditions such as asthma, atherosclerosis, cancer, late onset Alzheimer's disease, and rheumatoid arthritis. R&D Systems offers a wide range of research reagents useful for the study of TLR signaling pathways.



Detection of TLR6 by Flow Cytometry. Raw264 cells were stained with an anti-mouse TLR6 monoclonal antibody (Catalog # MAB1533; filled histogram) or rat IgG₂, isotype control antibody (Catalog # MAB006; open histogram) followed by PE-conjugated anti-rat secondary antibody (Catalog # F0105B).

101

100



Pam3CSK4-induced CXCL8/IL-8 Secretion & Neutralization. A. CXCL8/IL-8 secretion in response to increasing doses of Pam3CSK4 (a synthetic bacterial lipopeptide) was determined in HEK293 cells transfected with TLR2 using the human CXCL8/IL-8 Quantikine® ELISA Kit (Catalog # D8000C). B. The ability of Pam3CSK4 to stimulate CXCL8/IL-8 production in HEK293 cells transfected with TLR2 was neutralized by increasing concentrations of the anti-human TLR2 monoclonal antibody (Catalog # MAB2616).

TLR-Related Products

TOLL-LIKE RECEPTORS				
Molecule	Antibodies	Proteins	ELISAs/Assays	Primer Pairs
TLR1	НМ	Μ		HMR
TLR2	НМ	НМ		HMR
TLR3	НМ	НМ		HMR
TLR4	НМ	Н		HMR
TLR5				HMR
TLR6	М	М		HMR
TLR9	Н			H M R

Molecule	Antibodies	Proteins	ELISAs/Assays	Primer Pairs
c-Jun	H M	FIOLEIIIS	LLIJAS/ASSays	
JNK	HMR		H M R	
JNK1	HMR	Н	HMR	
JNK2	H M R		HMR	
ΙκΒ- α	Н			
ΙκΒ- β	H R			
ΙkΒ- ε	НM			
ΙΚΚα	H M R			
ΙΚΚβ	Н			
ΙΚΚε	HMR			
ΙΚΚγ	H M R			
IRAK1	Н			
IRAK4	Н			
IRF3	НМ			
MKK4	Н			
МКК7	Н			
MyD88	HMR			
NFĸB1	НМ			
ΝF κ B2	Н			
Phospho-JNK	HMR		HMR	
RIP1	HMR			
TAB1	НМ			
TRAM/TICAM2	HMR			
TRAF-3	HMR			
TRAF-6	Н			

PROTEOME PROFILER™ CYTOKINE ARRAY KITS			
Kit	Catalog #		
Human Cytokine Array Kit	ARY005		
Mouse Cytokine Array Kit	ARY006		
Rat Cytokine Array Kit	ARY008		



MoleculeAntibodiesProteinsELISA/AssaysPrimer PairsCCL2/MCP-1/JEHM Ga CRHM RCaHM CaHCCL3/MIP-1αHM CRHM CRHMHCCL3/MIP-1βHM CRHM CRHMICCL4/MIP-1βHM CRHM CRHMICCL5/RANTESHM CRHM CRHICCL5/MCP-3HM CRHHICCL3/MCP-4HMHHICCL13/MCP-4HAHCa FPHCa PAHCaCCL13/MCP-4HCa FPHCa FPHCa PAHCaCCL13/MCP-4HCA FPHCA FPHCAICCL13/MCP-4HCA FPHCA FPHCAICCL13/MCP-4HCA FPHCA FPHCAICCL13/MCP-4HM CRHM CRHICCL13/MCP-4HCA FPHCA FPHCAICCL13/MCP-4HM CRHM CRIICCL13/MCP-4HM CRHM CRIICCL13/MCP-4HM CRHM CRIICCL13/MCP-4HM CRHM CRIICCL13/MCP-10HM CRHM CRIIIFAHM CRHM CRHM CRIIIFAHM CRHM CRHM CRIIIL-14/LIFIHM CRHM CRHM CRIIIL-15/FILI%HM EPHM RCACREHM RCACREIIIL-16/FILI%HM EPHM REAIII<	TLR-SIGNALING TARGETS				
CCL3/MIP-1αHM CRHM CRHMCCL4/MIP-1βHM CRHM CRHMCCL5/RANTESHM CRHM CRHMCCL5/RANTESHM CRHMHCCL7/MCP-3HMHMHCCL3/MCP-4HH-CCL13/MCP-4HH-CXCL1/GR0αHHCa FPHCa PKXCL1/GR0αHH-CXCL10/IP-10HM CRHM CRHMFN-αHM CRHM CRHMIFN-βHM RCRPHMRCR PPHMIL-16//IL-1F1HM RCRPHMR CRPHMRIL-16//IL-1F2HM RCaCRFPHM RCaCREFHMRFPIL-1F5/FILIδHHM-IL-1F5/FILIδHMHM-IL-1F9/IL-1H1HH-IL-1F9/IL-1H2HMRCaCREFHMRCaCREFHMRCaFPIL-16/IL-1F3HMEPHMRCA-IL-16/IL-1F4HMIL-179/IL-1F3HMEPHMIL-179/IL-1F3HMEPHMIL-16HMRCaCREFHMRCaFPIL-16HMRCaCREFHMRCaFPIL-16HMRCaCREFHMRCaFPIL-12HMRCaFPHMRCaFPHMRCaFPHMRCaFPHMRHMRCaFPHMRCaFPHMRIL-12HMRCAFEHMRCAFPHMRCAFFHMRCAFFHMRCAFFPIL-12HMRCAFFHMRCAFFHMRCAFFHMRCAFFHMRCAFFHMRCAFFHMRCAFFHMR </th <th>Molecule</th> <th>Antibodies</th> <th>Proteins</th> <th>ELISAs/Assays</th> <th>Primer Pairs</th>	Molecule	Antibodies	Proteins	ELISAs/Assays	Primer Pairs
CCL4/MIP-1βH M CRH M CRH M CRH MCCL5/RANTESH M CRH M CRH MCCL5/RANTESH M CRH MHCCL7/MCP-3H MH MHCCL8/MCP-2H MH HHCCL13/MCP-4H MH CAHCXCL1/GR0αH Ca FPH Ca PH Ca PTXCL10/IP-10H M CRH M CRH MFN-αH M CRH M CRH MIFN-βH M RCPH M RCPH MIL-1α/IL-1F1H M RCPH M RCPH M RIL-15/FILIδH M RCa CRFPH M RFPIL-16/FIL1εH MH MIL-1F5/FILIδH MH MIL-1F9/IL-1H1H MH MIL-1F9/IL-1H1H MHIL-1F1/IL-1F3H M RCa CREFH M RCa CREIL-16/FIL1εH M RCa CREH MIL-1F9/IL-1H1H MH MHIL-1F9/IL-1H1H MIL-1F0/IL-1H2H M RCa CREIL-16H M RCa CREIL-17H M RCa CREIL-16H M RCa CREIL-17H M RCa CREIL-16H M RCa CREIL-17H M RCa CREIL-16H M RCa FPP <tr< th=""><th>CCL2/MCP-1/JE</th><th>H M Ca CR</th><th>H M R Ca</th><th>H M Ca</th><th></th></tr<>	CCL2/MCP-1/JE	H M Ca CR	H M R Ca	H M Ca	
CCL5/RANTES HM CR HM CRF HM CCL7/MCP-3 HM HM H CCL3/MCP-4 HM H H CCL13/MCP-4 H H H CCL13/MCP-4 H H H CCCL13/MCP-4 H H I CCCL13/MCP HMCR HMR HM CCCL13/MCP HMCR HMR H IFn-A HMCR HMRCR HM IL-16//IL-1F1 HMRCACRE HMR H IL-15//FILI% H H H H </th <th>CCL3/MIP-1α</th> <th>H M CR</th> <th>H M CR</th> <th>НМ</th> <th></th>	CCL3/MIP-1α	H M CR	H M CR	НМ	
CCL7/MCP-3HMHMHCCL8/MCP-2HMHHCCL13/MCP-4HHHCCL13/MCP-4HHHCXCL1/GR0αHHHCXCL1/JROQHQHCa FPHCa PHCXCL10/IP-10HMCRHMCRHMHIFN-αHMCRHMRCRPHMHIFN-βHMRHMRHMIIL-1α/IL-1F1HMRCRPHMRCRPHMRIL-1β/IL-1F2HMRCa CRFPHMRCRPHMRFPIL-1F5/FILIδHHIIL-1F5/FILIδHMHMIIL-1F3/FILIδHMRHMIIL-1F3/FILIδHMHMIL-1F3/FILIδHMRHMIL-1F3/FILIδHMRHMIL-1F3/FILIδHMRHMRIL-1F3/IL-1H1HHIL-1F3/IL-1F3HMRPHMRCaIL-1F3/IL-1F4HMRCa CREFHMRCa CREFIL-1F3/IL-1F3HMRCA CREFHMRCa CREFIL-16HMRCa CREFHMRCa CREFIL-10HMRCa CREFHMRCa CREFIL-12HMRCa FPHMRCa FPIL-12HMRCa CREHMRCa CREHMRCa CREHMRCa CREHMRCa EFP	CCL4/MIP-1β	H M CR	H M CR	НМ	
CCL8/MCP-2HMHHCCL13/MCP-4HHHCCCL13/MCP-4HHHCXCL1/GROαHHHCXCL1/GROαHHCa FPHCa PHCXCL10/IP-10HMCRHMCRHMHIFN-αHMCRHMRCR PPHMIIFN-βHMRHMRCRPHMRIIL-1α/IL-1F1HMRCa CRFPHMRHMRIL-1β/IL-1F2HMRCa CRFPHMRCa CREFHMRFPIL-1F5/FILIδHHMIIL-1F5/FILIδHMHMIL-1F5/FILIδHMHIL-1F3/FILIβHMHMIL-1F3/FILIβHMHIL-1F3/FILIβHMRHMIL-1F3/FILIβHMRHMIL-1F3/FILIβHMRHMRIL-1F3/FILIβHMRHMRIL-1F3/FILIβHMRPHMRIL-1F3/FILIβHMRPHMRIL-1F3/FILIβHMRPHMRIL-1F3/FILIβHMRPHMRIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRPHMRCAIL-1F3/FILIβHMRCAHMRCAIL-16 <th>CCL5/RANTES</th> <th>H M CR</th> <th>H M CR F</th> <th>НМ</th> <th></th>	CCL5/RANTES	H M CR	H M CR F	НМ	
CCL13/MCP-4 H H H CXCL1/GROα H H H CXCL3/L-8 HCa FP HCa FP HCa P H CXCL10/IP-10 HMCR HMCR HM H IFN-α HMCR HMRCR HM H IFN-β HMR HMR HM H IL-1α/IL-1F1 HMRCRP HMR HMR H IL-1β/IL-1F2 HMRCACRFP HMR HMR I IL-1β/IL-1F2 HMRCACRFP HMR HMR I IL-1F5/FILIδ HMR HM I I IL-1F5/FILIδ H H I I IL-1F7/FILIξ H H I I IL-1F9/IL-1H1 H H I I IL-1F9/IL-1H1 H H I I IL-1F9/IL-1H1 H H I I IL-1F0/IL-1HY2 H I I I I <tr< th=""><th>CCL7/MCP-3</th><th>НМ</th><th>НМ</th><th>Н</th><th></th></tr<>	CCL7/MCP-3	НМ	НМ	Н	
CXCL1/GROα H H H CXCL8/IL-8 H Ca FP H Ca FP H Ca P H CXCL10/IP-10 H M CR H M CR H M H IFN-α H M CR H M R CR P H M H IFN-β H M R CR P H M R CR P H M R H M IL-1α/IL-1F1 H M R CA CR FP H M R CR P H M R H IL-1α/IL-1F2 H M R Ca CR FP H M R Ca CR FF H M R FP - IL-1F5/FILIδ H H M - - - IL-1F5/FILIδ H M H M -<	CCL8/MCP-2	НМ	Н	Н	
CXCLB/IL-8 H Ca F P H Ca F P H Ca P H CXCL10/IP-10 H M CR H M CR H M H IFN-α H M CR H M R CR P H M R CR P H M IFN-β H M R H M R H M H IL-1α/IL-1F1 H M R CR P H M R CR P H M R H M IL-1α/IL-1F1 H M R Ca CR FP H M R Ca CR EF H M R FP · IL-1F5/FILIδ H H M H M · · IL-1F5/FILIδ H H · · · IL-1F5/FILIδ H H · · · IL-1F5/FILIδ H H · · · IL-1F3/IL-1F3 H M H · · · IL-1F8/FILIφ H · · · · IL-1F3/IL-1H1 H H · · · IL-1F3/IL-1H1 H H · · · · <	CCL13/MCP-4	Н	Н	Н	
CXCL10/IP-10 HM CR HM CR HM CR HM IFN-α HM CR HM RCR PPr HM	CXCL1/GRO α	Н	Н	Н	
IFN-α HM CR P HMR CR FPPr HM IFN-β HM R HM R HM R IL-1α/IL-1F1 HM RCR P HM R CR P HM R IL-1α/IL-1F2 HM RCa CR FP HM RCA CR FP HM RF P IL-1β/IL-1F2 HM R Ca CR FP HM R Ca CR FF HM RF P IL-1F5/FILIδ H HM	CXCL8/IL-8	H Ca F P	H Ca F P	H Ca P	Н
IFN-β HMR HMR HM IL-1α/IL-1F1 HMRCRP HMRCRP HMR IL-1β/IL-1F2 HMRCaCRFP HMRCaCREF HMRFP IL-15/FILIδ H HM	CXCL10/IP-10	H M CR	H M CR	НМ	
IL-1α/IL-1F1 HMRCRP HMRCRP HMR IL-1β/IL-1F2 HMRCaCRFP HMRCaCREF HMRFP IL-1F5/FILIδ H HM	IFN-α	H M CR P	H M R CR F P Pr	НМ	
IL-1β/IL-1F2 HMRCaCRFP HMRCaCREF HMRFP IL-1F5/FILIδ H HM IL-1F5/FILIδ H HM IL-1F6/FIL1ε HM HM IL-1F7/FILIζ H H IL-1F8/FILIη HM H IL-1F8/FILIη HM H IL-1F9/IL-1H1 H H IL-1F0/IL-1HY2 H H IL-1F10/IL-1HY2 H H IL-1F10/IL-1HY2 H H IL-1F3 HMRCaCRE HMRCaCRE IL-16 HMRCaCRE HMRCaCRE HMRCaFP IL-16 HMRCaCRE HMRCaCRE HMRCaFP IL-10 HMRCaCRE HMRCaCREF HMRCaFP IL-12 HMRCaFP HMRCaCRE HMRCAEFP TNF-α HMRBCACRE HMRBCACRE HMRCAEFP	IFN-β	HMR	HMR	НМ	
PPr IL-1F5/FILIδ H HM IL-1F5/FILIδ HM HM IL-1F6/FIL1ε HM HM IL-1F7/FILIζ HM HM IL-1F8/FILIη HM HM IL-1F8/FILIη HM HM IL-1F9/IL-1H1 H H IL-1F9/IL-1H12 H H IL-1F0/IL-1HY2 H H IL-1F3/IL-1F3 HMEP HMREP HM IL-16 HMRCaCRE HMRCaCRE HMRCaFP HMR IL-16 HMRCaCREF HMRCaCREF HMRCaFP HMR IL-10 HMRCaCREF HMRCaCREF HMRCaFP HMR IL-12 HMRCaFP HMRCaCRE HMRCaFP HMR TNF-α HMRBCaCRE HMRBCACRE HMRCaEFP HMRCaEFP	IL-1α/IL-1F1	H M R CR P	H M R CR P	H M R	
IL-1F6/FIL1ε HM HM IL-1F7/FILIÇ H H IL-1F8/FILIη HM HM IL-1F9/IL-1H1 H H IL-1F9/IL-1H1 H H IL-1F3/IL-1H12 H H IL-1F3/IL-1F3 HMEP HMREP HM IL-1ra/IL-1F3 HMEP HMRCaCRE HMRCaFP HMR IL-16 HMRCaCRE HMRCaCRE HMRCaFP HMR IL-10 HMRCaCREF HMRCaFPF HMR HMR IL-12 HMRCaFP HMRCaCRE HMRCaFPF HMR TNF-α HMRBCaCRE HMRBCACRE HMRCAEFP HMRCAEFP	IL-1β/IL-1F2	H M R Ca CR F P		HMRFP	
IL-1F7/FILIC H H IL-1F8/FILIΩ HM HM IL-1F9/IL-1H1 H H IL-1F9/IL-1H12 H H IL-1F10/IL-1HY2 H H IL-1ra/IL-1F3 HMEP HMREP HM IL-16 HMRCaCRE HMRCaCRE HMRCaFP HMR IL-10 HMRCaCREF HMRCaCREF HMRCaFP HMR IL-12 HMRCaFP HMRCaFPr HMP HMR TNF-α HMRBCaCRE HMRBCACRE HMRCAEFP HMRCAEFP	IL-1F5/FILΙδ	Н	НМ		
IL-1F8/FILiη HM HM IL-1F9/IL-1H1 H H IL-1F9/IL-1H12 H H IL-1F10/IL-1HY2 H H IL-1Fa/IL-1F3 HMEP HMREP HM IL-16 HMRCa CRE FP HMRCa CRE FP HMRCa CRE FP HMRCa CRE FP HMRCa CRE FP HMRCa FP IL-10 HMRCa CRE PV HMRCa FPP HMRCa FP HMR IL-12 HMRCa FP HMRCa CRE HMRBCa CRE HMRCa EFP HMRCa EFP	IL-1F6/FIL1 ε	НМ	НM		
IL-1F9/IL-1H1 H H IL-1F9/IL-1H12 H IL-1F3 IL-1ra/IL-1F3 HMEP HMREP HM IL-6 HMRCaCRE FP HMRCaCRE FP HMRCaFP HMR IL-10 HMRCaCRE PV HMRCaCREF FP HMRCaFP HMR IL-12 HMRCaFP HMRCaCRE HMRBCaCRE HMRCaFP HMR TNF-α HMRBCACRE HMRBCACRE HMRCAEFP HMRCAEFP	IL-1F7/FILIζ	Н	Н		
IL-1F10/IL-1HY2 H IL-1ra/IL-1F3 HMEP HMREP HM IL-6 HMRCaCRE FP HMRCaCRE FP HMRCaCRE FP HMRCaFP HMR IL-10 HMRCaCREF PV HMRCaCREF FP HMRCaFP HMRCaFP HMR IL-12 HMRCaFP HMRCaFPF HMP HMR TNF-α HMRBCaCRE HMRBCACRE HMRCaEFP	IL-1F8/FILIη	НМ	НМ		
IL-1ra/IL-1F3 HMEP HMREP HM IL-6 HMRCaCRE FP HMRCaCRE FP HMRCaFP HMR IL-10 HMRCaCREF PV HMRCaCREF PV HMRCaFP HMRCaFP IL-12 HMRCaFP HMRCaFPr HMP HMR TNF-α HMRBCaCRE HMRBCACRE HMRCaFP HMRCaFP	IL-1F9/IL-1H1	Н	Н		
IL-6HMRCaCRE FPHMRCaCRE FPHMRCaFPHMRIL-10HMRCaCREF PVHMRCaCREF PVHMRCaFPHMRIL-12HMRCaFP HMRCaCREHMRCaFPrHMPHMRTNF- α HMRBCaCREHMRBCaCRE HMRBCaCREHMRCaFPHMRCaFP	IL-1F10/IL-1HY2	Н			
FP FP IL-10 HMRCaCREF PV HMRCaCREF PV HMRCaFP HMRCaFP IL-12 HMRCaFP HMRCaFPPr HMP HMR TNF-α HMRBCaCRE HMRBCaCRE HMRCaFP HMRCaFP	IL-1ra/IL-1F3	HMEP	HMREP	НМ	
PV PV IL-12 HMRCaFP HMRCaFPPr HMP HMR TNF-α HMRBCaCRE HMRBCaCRE HMRCaFP HMRCaFP	IL-6			H M R Ca F P	HMR
TNF-α HMRBCaCRE HMRBCaCRE HMRCaEFP	IL-10			H M R Ca F P	HMR
	IL-12	H M R Ca F P	H M R Ca F P Pr	НМР	HMR
	ΤΝF- α				

TLR-ASSOCIATED MOLECULES				
Molecule	Antibodies	Proteins	ELISAs/Assays	Primer Pairs
Profilin-like Protein	Tg			
RP105	М			Н

Abbreviation Key: B: Bovine Ca: Canine CR: Cotton Rat E: Equine F: Feline H: Human M: Mouse P: Porcine Pr: Primate R: Rat Tg: T. gondii V: Viral



For more information on TLRs and Associated Molecules, please visit our website at www.RnDSystems.com/go/TLR

